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# Notes on the induced maturation and spawning in four-month-old *Penaeus monodon* Fabricius by eyestalk ablation

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## Introduction

The monoculture of sugpo *Penaeus monodon* Fabricius in brackishwater ponds is gradually gaining importance in the Philippines. Many pond operators in the Western Visayas region routinely harvest their prawns four months after stocking fry. It is, therefore, of practical interest to aquaculture whether ablation can induce maturation and spawning in prawns of this age so that no additional expenses for extended rearing are involved.

Unlike other penaeid species, sugpo females do not mature in captivity. Pond-reared males weighing a minimum of approximately 20 g, however, have yielded sperm upon dissection. So far, only eyestalk ablation has proven effective in inducing maturation and spawning in *P. monodon.*

## Materials and Methods

Forty-seven four-month old female *P. monodon* reared from wild fry of age $P_{25-30}$ in an earthen brackishwater pond in Pontevedra, Capiz province, Panay island and averaging 55.3 mm carapace length, 189.6 mm body length and 104.4 g body weight were unilaterally ablated. Introduced by R. G. Wear, the ablation technique consisted of making an incision across the eyeball to allow free flow of fluids while holding the prawn under water, squeezing the eyeball contents outwards, and pinching hard the eyestalk tissue. The cut area heals completely in about a week (Fig. 1); no application of antibiotics is necessary. Spent spawners were tagged with thin brass rings (Rodriguez, 1976) around the unablated eyestalk for a separate experiment on rematuration.

An equal number of unablated males with a minimum of 50 g body weight and coming from both pond and open sea trawler catch were stocked with the females in a 50-ton concrete tank 4.85 m long, 4.85 m wide and 2.25 m deep used for larval rearing in the indoor hatchery in Tigbauan, Iloilo. Water depth was maintained at one meter. The stock was fed salted mussel *Modiolus metcalfei* at 15% body weight daily. Stock sampling was undertaken weekly during which the tank was cleaned and the water changed. Physicochemical measurements taken at midmorning were: temperature, 23.8–26.2°C; salinity, 30–34 ppt; pH, 7.8–8.1; and alkalinity, 123.5–144.5 ppm $CaCO_3$.

## Results and Discussion

Two spawnings yielding approximately 277,000 eggs were obtained three weeks after ablation, followed four days later by two more spawnings with 160,000 eggs (Table 1); all four spawners weighed more than 100 g. With a hatching rate of 98% and 78% for the first and second batch, respectively, the spawnings produced viable nauplii. Water temperatures as low as 23°C due to a delayed cold spell in March depressed molting; weakened larvae had to be discharged at the mysis stage. Although ovarian development continued, no further spawnings were

**Fig. 1. Heads of 2 *Penaeus monodon* females: right eye of prawn at right is completely healed 1 week after ablation; left eyestalks of both prawns have been tagged for rematuration experiments.**

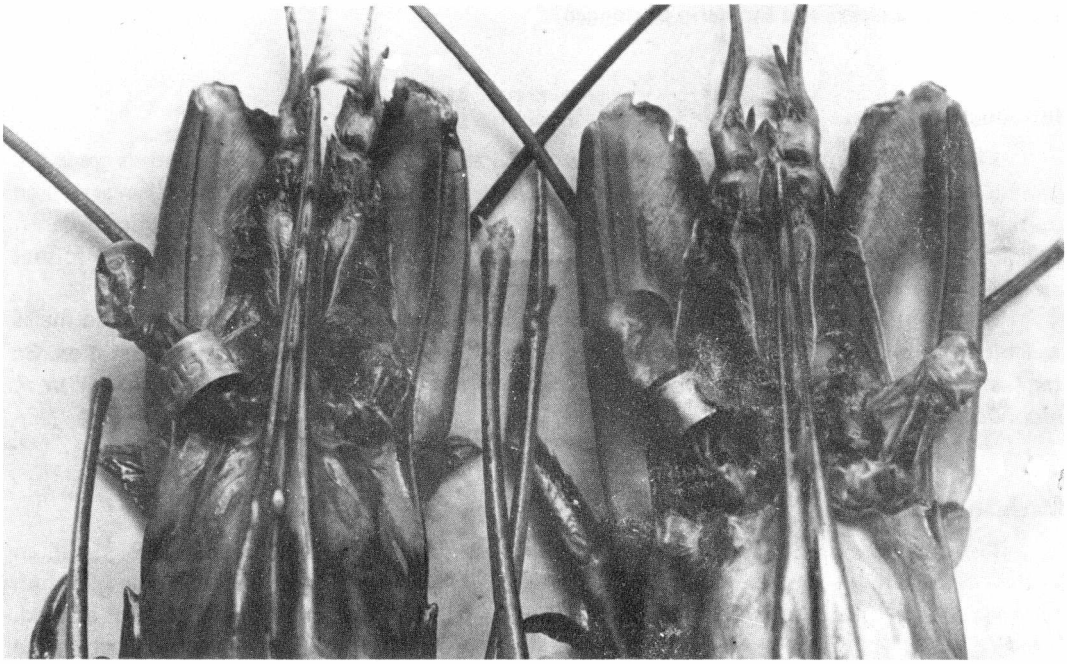

**Table 1. Record of spawners from unilaterally ablated four-month old pond-reared *P. monodon* females.**

| Date | Tag No | CL (mm) | BL (mm) | BW (g) | No. of eggs | No. of Nauplii | % Hatching Rate | Remarks |
|---|---|---|---|---|---|---|---|---|
| 3-9-77 | 004<br>016 | 58<br>59 | 190<br>196 | 109<br>114 | 277,440 | 272,640 | 98.3 | Poor molting rate due to low temperature; 2,000 $M_1$ and very few $P_1$ discarded. |
| 3-12-77 | 033<br>049 | 56<br>61 | 185<br>200 | 102<br>137 | 160,000 | 130,000 | 81.2 | Poor molting rate due to low temperature; out of 5,000 $M_3$ to Feed Lab. |

obtained due mainly to the onset of bacterial and fungal disease. Infection is initiated in injured portions of the exoskeleton, sometimes penetrating right through the muscles to the ovarian tissues. The non-flowthrough conditions and mussel meat feeding led to fouling of the culture water resulting in consecutive mortalities caused by disease.

Female *P. monodon* held in maturation pens were ablated at the age of 15 months (Santiago, et al., 1976); they averaged only 16 g body weight after four months growth in ponds. In another experiment, pond-reared *P. monodon* females ranging from 50 to 80 g were ablated at approximately seven months (Aquacop, 1977). The present results show a minimum age of four months from postlarva that *P. monodon* is capable of ovarian development and spawning upon ablation. However, maturation is probably affected by size as well as age – the four-month old females weighed an average of 100 g in contrast to the smaller animals in the earlier experiments.

**Literature Cited**

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